Integration of SAP R/3 with BO Universe Using Data Federator Connector

Applies to:
SAP R/3 and SAP BusinessObjects XI 3.1 Universe with Data Federator integration For more information, visit the Business Objects homepage.

Summary
This document describes how to connect SAP R/3 system with the SAP Business Objects Universe by using Data Federator Integration Kit. It also shows the required configuration and challenges faced during the integration.

Author: Shiva Kumar G.C
Company: Quinnox Consultancy Services
Created on: 10 May 2010

Author Bio
Shiva Kumar G C is a Consultant with Quinnox Consultancy Bangalore. Shiva has knowledge in ABAP, BI and BO.
Table of Contents

Introduction to Data Federator...........................................................................................................................................3
Steps to integrate SAP R/3 with Data Federator ................................................................................................................3
Connectivity configuration between BOE and Data Federator .......................................................................................10
  Updating JDBC.SBO ......................................................................................................................................................10
  Adding Universe Strategy ..............................................................................................................................................10
Creating a Universe using Data Federator as a database ...............................................................................................11
Related Content .................................................................................................................................................................19
Disclaimer and Liability Notice ....................................................................................................................................20
Introduction to Data Federator

Data Federator creates a real-time, unified view of your data sources with virtual data integration. It can do the following:

- enable SAP Business Objects Web Intelligence reports on SAP ERP, SAP CRM
- extends the reach of Web Intelligence’s popular ad hoc query and reporting capabilities to those end users who want better visibility into SAP operational systems
- combine historic information with SAP ERP real time information in the same universe
- has the ability to compose multiple ABAP functions, SAP Query or Infoset in the same Universe.

Steps to integrate SAP R/3 with Data Federator

The connector has been designed to connect SAP BusinessObjects with SAP ABAP functions, SAP Query and Infoset through the Universe semantic layer. It allows easy design for ad-hoc reports and queries.

In the below example I used MARA and MARC table to create SAP Query(ZDATAFED_QUERY) and to integrate this SAP query with SAP BO universe using data federator.

Query for Data Federator

<table>
<thead>
<tr>
<th>FO</th>
<th>MRO</th>
<th>I</th>
<th>Material</th>
<th>Old material</th>
<th>Elle</th>
<th>Unit</th>
<th>Document</th>
<th>No</th>
<th>Predimensions</th>
<th>For</th>
<th>Size</th>
<th>dimensions</th>
<th>Basic article</th>
<th>Gross</th>
<th>Weight</th>
<th>kW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MARA</td>
<td>I</td>
<td>HR</td>
<td>000</td>
<td>0</td>
<td>KG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH00</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH00</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH00</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH00</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH00</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH00</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIBE</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIBE</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIBE</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIBE</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIBE</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIEN</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIEN</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIEN</td>
<td>M</td>
<td>PC</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEIT</td>
<td>M</td>
<td>02604</td>
<td>PC</td>
<td>000</td>
<td>0.200</td>
<td>KG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEIT</td>
<td>M</td>
<td>02604</td>
<td>PC</td>
<td>000</td>
<td>0.200</td>
<td>KG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEIT</td>
<td>M</td>
<td>02604</td>
<td>PC</td>
<td>000</td>
<td>0.200</td>
<td>KG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEIT</td>
<td>M</td>
<td>02604</td>
<td>PC</td>
<td>000</td>
<td>0.200</td>
<td>KG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NLAG</td>
<td>M</td>
<td>004</td>
<td>PC</td>
<td>000</td>
<td>0</td>
<td>KG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NLAG</td>
<td>M</td>
<td>004</td>
<td>PC</td>
<td>000</td>
<td>0</td>
<td>KG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Start Data Federator Designer.

   ![Data Federator Designer](image)

   **Log on to BusinessObjects Data Federator Designer**

   Enter your user information and click Log On.  
   (If you are unsure of your account information, contact your system administrator.)

   ![Login Screen](image)

   User Name: sysadmin
   Password: ********

   Log On

   BusinessObjects Data Federator Designer XI 3.0 Service Pack 2 - 12.2.6.0 (Build 912091715)

   Click **Add Project**. Enter the project name and description.

   ![Add Project](image)

   2. Click **Add**. Add datasource.
3. Select the data source from the list of data sources. SAP > SAP ERP > SAP ERP Java Connector (JCO).
4. Enter the connection parameters that are needed to connect with SAP R/3. For example, **Defined resource**, **Client**, **Application server**, **System number**, **User Name**, **Password**, etc.

   Projects > zproj_datafed_sap > Datasources > SAP_DATAFED > Draft

   - **Defined resource**: `X0F:SRP3:ABAP`
   - **Client**: 000
   - **System ID**: 
   - **Connection type**: Direct
   - **Application server**: 
   - **System number**: 00
   - **Router string**: 
   - **Authentication mode**: Use a specific database logon for all Data Federator users
     - **User Name**: 
     - **Password**: ***************
     - **Login domain**: Choose a defined login domain

   - **Test the connection** button

5. Click **Test the connection**. Here the connection is established. There is need to enter source type.

6. Below is shown an option to select source type **ABAP Function**, **Infoset** or **Query**. Select Query. Enter the SAP query name (ZDATAFED_QUERY) that was created.
7. Click test the connection. The connection was successful appears.
8. Deploy the data source created in Data Federator to SAP BO Universe by entering the deploy address.
9. Change the data source from draft to final. Click **Make Final** as shown below.
**Connectivity configuration between BOE and Data Federator**

Data Federator creates a virtual database which can be accessed trough JDBC by universes. If you want to create a universe that connects to this Data Federator database, there are two configuration steps required in BOE.

- Connect the Universes to Data Federator using JDBC. Update the data access driver configuration file jdbc.sbo.
- Add the new Data Federator Universe strategy to generate the relational Universes automatically.

**Updating JDBC.SBO**

The data access driver file jdbc.sbo has to be updated to include the classpath to the Data Federator jdbc driver (thindriver.jar):

1. Edit jdbc.sbo with a text editor like Notepad. You can find jdbc.sbo in C:\Program Files\Business Objects\Businessobjects Enterprise 12.0\win32_x86\dataAccess\connectionServer\jdbc
2. Search for "federator". You should see the following entry:
   <JDBCDriver>
3. Right below <JDBCDriver> add the following line:
   <ClassPath><Path>C:\Program Files\Business Objects\BusinessObjects Data Federator 12\JdbcDriver\lib\thindriver.jar</Path></ClassPath>
4. Save and close jdbc.sbo.

**Adding Universe Strategy**

A strategy is a script that automatically extracts structural information from a database. Strategies have two principle roles:

- automatic join and cardinality detection (Join strategies)
- automatic class, object, and join creation (Objects and Joins strategies).

Data Federator has a strategy for the automatic generation of relational universes from NW BI data. The strategy file can be found in the "BOE-Add-ons" folder on the Data Federator CD. To add the strategy to BOE:

1. Copy the strategy file datafederator.stg to C:\Program Files\Business Objects\BusinessObjects Enterprise 12.0\win32_x86\dataAccess\connectionServer\jdbc
2. Add the link to the Data Federator strategy file.
   3. a. Edit the file C:\Program Files\Business Objects\BusinessObjects Enterprise 12.0\win32_x86\dataAccess\connectionServer\jdbc\jdbc.sbo
   b. Find the section <DataBase Active="Yes" Name="Data Federator Server"> and add the link to the strategy file by adding the following entry as one of the parameters
   <Parameter Name = "Strategies File"> datafederator</Parameter>
After the change how jdbc.sbo file should look like the following:
Creating a Universe using Data Federator as a database

The Data Federator works like a classical JDBC data warehouse. In order to create business objects on top of the virtual tables, define a new universe that will use the previously defined data source.

Here are the steps:

1. Start the Universe Designer Application.

2. Create a new Universe.
Add a new connection.

3. Choose a new connection. Type Business Objects > Data Federator Server > JDBC Drivers. Enter the Connection name.
4. Enter the Connection Details previously provided by the Data Federator Deployment.
5. Click **Test Connection**.

6. Start the table browser. Insert the desired table from the list of tables.
7. Create a class.
8. Drag required fields into the class.
9. Save and export the Universe to repository.
10. Click OK.
Related Content

Business Objects and SAP
Connectivity Configuration In Data Federator
SAP Business Objects Data Federator
Disclaimer and Liability Notice

This document may discuss sample coding or other information that does not include SAP official interfaces and therefore is not supported by SAP. Changes made based on this information are not supported and can be overwritten during an upgrade.

SAP will not be held liable for any damages caused by using or misusing the information, code or methods suggested in this document, and anyone using these methods does so at his/her own risk.

SAP offers no guarantees and assumes no responsibility or liability of any type with respect to the content of this technical article or code sample, including any liability resulting from incompatibility between the content within this document and the materials and services offered by SAP. You agree that you will not hold, or seek to hold, SAP responsible or liable with respect to the content of this document.